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Statement of

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Under Secretary of Defense for Acquisition and Technology

Before the
Subcommittee on Research & Development and the
Subcommittee on Procurement

of the

House Committee on National Security

on

The DoD Tactical Aviation Modernization Program

March 5, 1997

Chairman Weldon, Chairman Hunter, members of the subcommittees, thank you for the opportunity to appear today to discuss the Department's plans for modernizing US tactical aviation forces. We have won a great cold War with the former Soviet Union-but five years later, we still have not yet secured the peace or found a term better than "post-Cold War" to describe the current era. It's a term that describes where we are today relative to the past. But what about our relationship with the future?

The Department's plans to modernize US tactical aviation forces reflect a commitment on the part of this generation to provide future generations of American airmen, sailors, soldiers and marines-some of them not yet born-with the advantage of possessing overwhelming air dominance. No US ground combat soldier has been killed by an enemy aircraft in over 40 years-we seek nothing less than to extend this legacy to another generation of American war fighters.

Thirty-five years ago, John F. Kennedy lived in another, earlier period of profound opportunity. He saw an opportunity to embrace the future and shape it. His counsel to an earlier generation of Americans was: "Let it not be said of this Atlantic generation that we have left our ideals and visions to the past. . . we have come too far, we have sacrificed too much, to disdain the future now."

His counsel was right then-as it is now. Thirty-five years from now, our grandchildren will look back upon this era as the time when so many of the key decisions were made that shaped the world security structure for the first half of the 21st century. America's tactical air forces will be an important part of that 21st century world security structure.

There are really two tactical aviation (TACAIR) issues before us today. One, do we seek merely a sufficient air advantage or are we committed to securing overwhelming air dominance for US forces? And two, do we foreclose available options to make a break with the past and dramatically reduce the cost of tomorrow's tactical aviation forces?

Mr. Chairman, the answer to the first issue should be clear-we are not looking for an equal or fair fight. If our deterrence fails and we must go to war with a future adversary, we want it to be unfair-we want air dominance to be wholly and completely on our side. It is important to note that all intelligence estimates of foreign capabilities are based on the assumption that the US is executing the current plan. Indeed, if competitor nations were to perceive a sharp reduction in US TACAIR commitment, they might significantly robust their initiative to compete on a par with the US. In addition, other countries learned the lessons of the Gulf War-do not let the US enter the combat zone in force and unopposed. The best opportunity to prevent the US from gaining its interests are at the outset.

Another consideration is that the US military strategy is expeditionary in nature. This means US forces may have to fight their way into hostile theaters with small forces facing the entire military force the enemy can field. And a final factor that must be considered is that overwhelming air dominance allows the US to fight asymmetrically in ways other nations cannot. The consequence of having air dominance means that all the other things we are trying to do-at sea or on the land-are made possible because these operations are not going to be halted by opposing enemy air forces.

The second issue-keeping our carefully planned modernization options open-is no less profound than the issue of achieving air dominance. I am pleased to report that the United States is uniquely positioned to take advantage of a revolutionary new acquisition approach that would not only field dominant TACAIR forces, but do so at the lowest possible cost, and firmly establish a competitive US tactical aviation industry that is second to none in the world. Mr. Chairman, today's decision is about keeping our critical options open-not foreclosing on alternatives for the future.

PLANNED EVOLUTION

The current tactical aviation force structure is 20 Air Force Fighter Wing Equivalents (FWE), 11 Navy Carrier Air Wings, and 4 Marine Aircraft Wings. Today, the Air Force has about 4.1 fighter wing equivalents, composed of F-15A/B/C/D model aircraft dedicated to the air superiority mission. By 2030, the last F-15C/D models will have been phased out of the inventory and replaced by the F-22. In the long range attack and attack roles, a new replacement interdiction aircraft (RIA) will replace today's F-15E and F-117 aircraft respectively by 2030. And by 2030, about 13.6 fighter wing equivalents of Joint Strike Fighters will replace today's F-16C/D and A-10 fleets in the multi-role and close air support roles respectively .

Today, a total of 11 Navy carrier wings are composed of F/A-18A/C and F-14/A/B/D aircraft to support littoral power projection operations. By 2030, this fleet will have transitioned to a mix of F/A-18E/F Super Hornet and Joint Strike Fighter aircraft (naval variant). The Marine Corps fields a total of 25 TACAIR squadrons in four Marine Air Wings. There are 12 squadrons of single seat F/A-18A/Cs, six squadrons of two seat F/A-18Ds, and seven squadrons of AV-8Bs. These aircraft perform close air support, interdiction, anti-air warfare, supression of enemy air defenses, and reconnaissance. By 2030, the Joint Strike Fighter (short take-off and vertical landing variant) will replace all three of these aircraft as the Marines neckdown to an all STOVL multi-role force.

INVENTORY AND AGING PATTERNS

The US tactical aviation fleets are aging beyond the half-life range norm of 5-10 years that was established during the Cold War. The half-life range norm has been raised to 10-15 years and, in some cases, we are projected to exceed these norms as well. These aging patterns indicate that the Department's planned modernization program is badly needed.

Air Force Tactical Aviation

During the first decade of the next century, Air Force tactical aviation inventories are expected to drop about 10-12 percent below the levels required to meet current force structure requirements. The air superiority fighter fleet will reach an average age of 20 years around 2003 and will drop back into 10-15 half-life range thereafter with the introduction of the F-22 to the inventory. The multi-role fighter fleet will reach an average age of 20 years in the 2009 time frame and will then begin to drop towards established norms with the introduction of the Joint Strike Fighter. In 2010, nearly 65 percent of the Air Force tactical aviation inventory will be composed of aircraft that are 19-24 years old or greater. From a flying hour standpoint, the fleet averages are closer to established norms.

Department of the Navy Tactical Aviation

As was the case with the Air Force, Department of the Navy (DoN) tactical aviation inventories are expected to drop about 10 percent below the levels required to meet current force structure requirements during the first decade of the next century. The F-14 fighter fleet will reach an average age 20 years around 2005 and stay at this level until the last F-14s are retired around 2010. The Navy's fighter attack fleet is in much better shape due to the introduction of the F/A-18E/Fs in significant numbers. In 2010, about 35 percent of the DoN tactical aviation inventory will be composed of aircraft that are 19-24 years old or greater. By 2014, about 61 percent of the Department of the Navy's tactical aviation fleet will be newly built F/A-18E/Fs or Joint Strike Fighters. From a flying hour standpoint, the situation is a little worse than is the case with the Air Force and the fleet averages tend to exceed established norms.

THE BIG THREE

F/A-18E/F Super Hornet

The F/A-18E/F, operating with other Navy battlegroup assets, will provide a survivable, first-day of the war strike fighter capability that will meet the threat well into the first part of the 21st century. The F/A-18E/F is less expensive to develop than a new start program because it is an upgrade to the existing F/A-18 aircraft program. The F/A-18E/F is a multi-mission tactical aircraft designed to replace the F/A-18A/B/C/D, and F-14 aircraft as they reach the end of service lives and are retired. The F/A-18E/F is designed primarily to meet Navy air superiority, interdiction, fleet air defense, and close air support requirements. Enhancements will include the increased range, increased payload, increased carrier recovery payload, improved survivability, and system growth (volume, electrical, cooling) required for the F/A-18E/F to meet its strike fighter role.

In 1987, the Secretary of Defense directed the Department of the Navy and Department of the Air Force to investigate derivatives of existing aircraft to maintain force structure in tactical aviation. Numerous studies conducted by the Navy looked at the future of naval aviation, projected hostile threats, and the capabilities required to defeat those threats. Multi-mission capability in the aircraft of the future was a requirement which would help the Navy consolidate to a fewer number of more capable aircraft types onboard the aircraft carrier.

Those cost and operational effectiveness studies determined that an upgraded version of an existing airframe, either the F-14 Tomcat or F/A-18 Hornet, could meet the requirements. In 1991, an upgraded version of the F/A-18 Hornet was selected as the preferred solution. Secretary of Defense Cheney stated at the time that "the modernization of naval aviation must be bounded by affordability. In selecting the F/A-18E/F we considered not only performance and unit price, but also a host of other factors which impact on cost. In the final analysis, the F/A-18E/F was the clear choice." The F/A-18E/F Super Hornet was developed to provide increased range, increased payload recovery, increased payload flexibility, improved survivability, and renewed (15 plus years) growth potential.

The first Enginnering and Manufacturing Development (E&MD) model of the F/A-18 E made its initial flight on November 29, 1995. All seven flight test aircraft have been delivered to Patuxent River Naval Air Station on or ahead of schedule and are fully engaged in the flight test program. As of February 1997, those 7 aircraft have completed over 395 test flights and flown over 600 hours. Over 93 percent through its engineering and manufacturing development phase and 17% through its flight test program, the E/F program is on cost, on schedule -- and 741 pounds below its weight specification. Furthermore, the aircraft is meeting or exceeding all of its performance parameters. In February 1997, the aircraft successfully completed initial Sea Trials aboard the USS Stennis.

The $4.88 billion (base year 1990 dollars) F/A-18E/F E&MD effort will end in fiscal year 2000, and procurement of the first LRIP aircraft will begin this fiscal year. Initial operational capability is planned for fiscal year 2001. Recent modernization decisions will allow F/A-18 E/F production to

reach the planned maximum rate one year earlier than previously anticipated.

The Navy evolved its plans for the future of its aviation forces based on a number of factors, among them the end of the Cold War and restricted procurement budgets. As a result, the F/A-18E/F has emerged as its principal tactical aircraft. By 2010 the carrier air wing will be composed of the F/A-18C and the F/A-18E/F. For future battle commanders, the F/A-18 E/F will provide such operational benefits as 50 percent more time on station, 35-50 percent more range, 50 percent more target coverage, 80 percent greater standoff for the battle group, and 65 percent more penetration compared to the combat proven F/A-18 C. After 2010, the F/A-18E/F will be complemented by one squadron of Joint Strike Fighters in each carrier air wing.

On March 7, 1996, the F/A-18 Navy Industry Team was presented the first Department of Defense Excellence in Acquisition Award "in recognition of acquisition excellence and superior performance in the engineering and manufacturing development phase of the Navy's F/A-18E/F." The award also noted its successful first flight, and the fact that it was one month ahead of schedule, on cost, and met or exceeded performance requirements.

A primary focus for the F/A-18E/F E&MD program has been cost management and affordability. The program's survivability approach reflects a balance-reduced radar cross section, improved countermeasures, and reduced vulnerable area-for a reduced F/A-18E/F combat attrition that is 3-5 times lower than the F/A-18C/D in analyses of future scenarios conducted for the 1997 F/A-18E/F Cost and Operational Effectiveness Analysis (COEA).

During the design phase, manufacturing personnel were teamed with design engineers to form Integrated Product Teams to ensure the parts can be easily manufactured. Advanced manufacturing techniques such as high-speed machining enabled large parts to be milled from a single billet or forging versus sheet metal build-up. As a result, parts, weight, and assembly hours have all been dramatically reduced. While the F/A-18E/F is larger than the F/A-18C/D, it has 42 percent fewer parts.

The Navy and contractor have also formed an integrated flight test team composed of contractor and government test pilots, engineers, and technicians. Previously, the contractor would perform the development and initial testing and then turn it over to the Navy for validation. The Navy and its contractors are going through development and testing together, as a team. Four Navy and three contractor test pilots are flying the test aircraft at Patuxent River Naval Air Station. This integrated approach will decrease the testing time from four years to three years-a savings of time and money.

With the F/A-18E/F, the Navy is developing-at one-half to one-third the cost of a "start from scratch" program-a highly capable, carrier based tactical aircraft for the twenty-first century. The F/A-18E/F program satisfies the Navy's need for a longer range, more capable, more survivable strike fighter with growth capability to fill its flight decks well into the next century.

F-22

The F-22 provides the joint force commander with a land based air superiority fighter designed to penetrate, operate in and dominate enemy airspace from Day One, without the need for a large supporting force. The F-22 will replace the F-15 aircraft in the Air Superiority role to counter emerging threats worldwide while flying over fifty percent more sorties, with forty per cent fewer personnel, and using fifty per cent less airlift than the F-15. The F-22 is designed to penetrate enemy airspace and achieve first look-first shot-first kill capability through the synergy of its stealth, supercruise, and integrated avionics.

The F-22 is the first weapon system designed from the outset with its principal focus on exploiting the ongoing information revolution while simultaneously denying an enemy the ability to do the same. While integrated avionics allow for dominant battlespace awareness, stealth denies crucial information to the enemy. Supercruise increases weapon performance, while reducing the enemy's ability to make effective use of the small amount of information they can gather. The F-22 also has the ability to conduct air-to-ground operations, carrying two 1000 pound Joint Direct Attack Munitions internally with a future growth capability for external carriage. This affords the Joint Force Commander (JFC) with needed flexibility to attack highly defended targets anywhere in the battlefield at times when other strike assets may not be available.

The F-22's low-observable characteristics, supersonic cruise speed, maneuverability, and advanced avionics will guarantee its effectiveness in the air superiority role. The first engineering and manufacturing development (E&MD) aircraft is scheduled to fly in May 1997. Tests of a full-scale pole model began in the fall of 1996 to confirm the aircraft's low-observable signature qualities; software development and integration are continuing as well. Plans call for production deliveries of the first two of a planned total buy of 438 aircraft to begin in fiscal year 2002, with initial operational capability slated for fiscal year 2005.

The F-22 entered E&MD in 1991. The E&MD program consists of all required design activity needed to field the F-22 weapon system. This includes design, fabrication, and development testing of 9 flight test vehicles; design, fabrication, and development testing of 26 E&MD flight qualified engines; update of the Demonstration/Validation Avionics Flying Laboratory into a Flying Test Bed for use in developing and integrating the E&MD avionics suite (including the electronic warfare systems); and the design and development of the F-22 support and training systems. From the outset, the F-22 program has placed balanced emphasis on performance, survivability, reliability/maintainability, and affordability. The aircraft is meeting or exceeding all performance requirements. The first flight is scheduled for May 1997. Release of long lead production funding for the first production lot of two aircraft is scheduled for fiscal year 1998.

F-22 affordability initiatives date back to the initial acquisition strategy of the Advanced Tactical Fighter (ATF). During the Demonstration/Validation phase of the ATF program, the Air Force implemented many of the 1986 Packard Commission recommendations. Those initiatives included streamlining of the acquisition organization and procedures; the use of technology to reduce cost, which included a competitive prototyping strategy and early operational testing; and the balancing of cost and performance through early trade-offs on user requirements. This approach

defined an executable, affordable program before committing to the increased costs associated with Engineering and Manufacturing Development.

When the F-22 successfully transitioned into Engineering and Manufacturing Development, the use of Integrated Product Teams was a centerpiece of the acquisition strategy. This approach employs multi-functional government-industry teams, all working towards a design that properly balances cost, schedule and performance. The IPT approach has been shown to result in less redesign, scrap and rework than the traditional serial development process. The product is an affordable, highly effective and properly time phased weapon system.

A February 1997 Defense Acquisition Board (DAB) reviewed and approved changes to the program based on a Joint Cost Estimating Team review; it approved the restructured approach, while preserving the original IOC date of November 2004; maintaining 438 production aircraft, and staying within the available funding within the FYDP.

Major changes to the program include moving the Full-Rate production decision from September 2002 to July 2003; moving funds from production to EMD; and slowing the production ramp-up by adjusting low-rate initial production rate. Further, the program deleted three Pre-Production Vehicles, while retaining the previous nine EMD test aircraft.

The program EMD phase was extended by nine months to account for revised avionics development and flight testing, and to address out-of-production parts problems. An Affordability Improvement Team is looking at open systems opportunities applicable to F-22. Finally, we directed a detailed definition of cost reduction initiatives and producibility enhancements for the program with long term affordability as a key goal.

The F-22 Program from its inception has led the way in implementing Lean Enterprise initiatives, beginning in E&MD and flowing forward into the production phase. The goal is to reduce costs, reduce delivery timelines, and improve quality in all areas. These initiatives will lead the way in reducing unnecessary oversight. These Lean Enterprise initiatives are geared towards reducing cycle times by 40 percent on the air vehicle and 60 percent on the engine. Other affordability initiatives include reducing unnecessary security provisions, migrating the advanced integrated avionics toward greater levels of open systems architecture, using a common integrated Logistic Support Analysis database, using proven commercial practices whenever practical, and using commercial off-the-shelf software alternatives.

<u>Joint Strike Fighter</u>

Service plans call for the JSF to replace the F-16 and A-10 and complement the F-22 in the Air Force, replace the AV-8B and F-18 in the Marine Corps, and provide the Navy with a stealthy first day strike aircraft to complement the F/A-18E/F. Because these earlier aircraft were bought at high annual rates during the 1970s and 1980s, high JSF production levels will be needed to preclude a precipitous decline in tactical aviation forces for all the Services around 2010.

The 1993 Bottom-Up Review (BUR) determined that a separate tactical aviation modernization program by each Service was not affordable and canceled the Multi-Role Fighter (MRF) and Advanced Strike Aircraft (A/F-X) program. Acknowledging the need for the capability these canceled programs were to provide, the BUR initiated the Joint Advanced Strike Technology (JAST) effort to create the building blocks for affordable development of the next-generation strike weapons system.

After extensive review of the program in August 1995, I recommended we drop the "T" in the JAST program and requested that the Deputy Secretary of Defense convene a mini-DAB to establish our priorities and funding. The JSF program has emerged from the JAST effort. As a multi-mission sortie generator for the Air Force, JSF will replace the F-16 and A-10 as they reach the end of their service life beginning around FY 2010. The cancellation of the A-12 in 1991 left the Navy with the unfulfilled requirement for stealthy, stand-alone, long-range strike capability. The JSF will satisfy that requirement and complement the F/A-18E/F. The Marine Corps has a long-standing requirement to replace their TACAIR forces with a common STOVL aircraft that goes where Marines go, is responsive to the ground commander, and can operate from forward bases or amphibious ships. Introduction of the STOVL JSF variant in 2008 will meet Marine Corps needs as existing aircraft reach the end of their service life. The JSF program provides an affordable answer to multi-service requirements.

The Joint Strike Fighter's "common family of aircraft" approach is a <u>new</u> way of doing business to satisfy the strike warfare requirements of the Navy, Air Force and Marine Corps more affordably. The JSF concept is nothing like the approach taken on the former F-111 program in the late 1960s. Advances in the technology, design tools, and manufacturing processes have significantly changed the manner in which aircraft are designed and built. Rather than force-fitting a common aircraft design to the different requirements of three Services, the JSF concept is using these advances in technology to build three highly common aircraft variants on a common production line.

The focus of the JSF Program is on affordability-reducing development, production, and ownership cost. The program is accomplishing this by facilitating the development of fully validated, operational requirements by applying "cost-as-an-independent-variable (CAIV)" cost-performance trades, and lowering risk by investing in and demonstrating key leveraging technologies and operational concepts prior to the start of Engineering and Manufacturing Development (E&MD).

In the past, meeting the threat dictated an emphasis on performance, creating a culture in which cost and schedule were thought of as dependent variables in the acquisition process-performance levels were specified and the cost and schedule were adjusted to achieve that outcome. The JSF Program is employing the CAIV approach to facilitate the establishment of an affordable, mission effective solution to the Services' needs. CAIV will address the links and sensitivities between mission effectiveness, system performance, and cost. The Services established top-level, aggressive unit flyaway goals, and the program provided them to the competing weapon systems contractors. During the Concept Demonstration Phase, program contractors will be required to continue to use costs (unit flyaway, Engineering and Manufacturing Development, and Operations and Support costs) as independent variables for trade studies. This is the first time I have seen serious attention

given to life cycle cost this early in a program.

The JSF program will ultimately build three different designs with a high degree of "cost commonality." The designs will have key, high cost components in common-engines, avionics, and many of the high cost structural components. This is different from past attempts at joint aircraft programs, which tried, unsuccessfully for the most part, to use one design to meet all Services' requirements. The Services are working together on a set of joint requirements. The contractors are conducting extensive studies to determine the appropriate level of commonality, and to identify where it makes sense to sacrifice commonality to meet unique Service needs. The JSF concept is building three highly common variants on the same production line using flexible manufacturing technology. Cost benefits result from using a flexible manufacturing approach and common subsystems to gain economies of scale. Cost commonality is projected in the range of 70-90 percent; parts commonality will be lower, but emphasis is on commonality in the higher-priced parts. Commonality also brings the benefits of common depot maintenance, a commonly supported logistics tail, and increased service interoperability. Development savings from the JSF "family of aircraft" approach are estimated at nearly $18 billion in constant FY 1995 dollars compared to three separate stand-alone programs, with total life cycle cost (LCC) savings projected at 33-35 percent compared to historical programs.

The "family of aircraft" concept allows a high degree of commonality, while satisfying unique service needs. JSF Concept Exploration Phase results underscored the possibility and benefit of commonality as a viable means of achieving a cost effective solution to maintaining the nation's combat superiority. Concept Development Phase efforts ratified the conclusion of the program's competing weapon system contractors that a family of aircraft can meet tri-service needs, and do so while providing significant life cycle cost savings. Boeing and Lockheed-Martin will now demonstrate commonality and modularity, STOVL hover and transition, and low speed handling qualities of their respective designs.

The JSF concept that has emerged from a continuing set of analyses will share an airframe substantially common among all users. It will have a single engine, based on analysis of the costs and benefits of 1- versus 2-engine propulsion. These studies showed that a single engine, if sufficiently powerful, could meet operational needs if it had an adequately reliable set of auxiliary equipment. The engine selected will be a derivative of an engine developed for the F-22. The Marine Corps version will be capable of STOVL operations. Although STOVL and aircraft carrier suitability impose special needs, the competing contractors' approaches retain high commonality among the three variants.

The JSF will be designed to carry a minimum of two air-to-ground weapons and two medium-range air-to-air missiles internally (plus other weapons on wing-mounted stations when appropriate). Determination that the basic aircraft should have internal, rather than external, weapons carriage, was a key aspect of initial aircraft sizing. Extensive requirements analysis, using the department's standard aircraft survivability models, led to a determination that future surface-to-air threats demanded comparatively low aircraft signature in initial wartime operations.

Although expected to be primarily a one-seat aircraft, some two-seat variants may be developed. Avionics are being defined now, and are expected to draw from work done for the F-22 and other

programs. The program office has designed an increasingly detailed series of analyses in coming years to resolve the remaining questions concerning detail design and equipment configuration.

As a result of these studies, the JSF is expected to be considerably more capable than the Air Force F-16, Navy F/A-18C, and Marine Corps AV-8B. On the other hand, the JSF will be capable of meeting the Navy's needs at a much more affordable cost than previously planned successor systems, such as the now-canceled A-12 and A/F-X programs.

Fiscal Year 1995 legislation merged the Defense Advanced Research Projects Agency (DARPA) Advanced Short Take-off and Vertical Landing (ASTOVL) program with the JSF Program. This action drew the United Kingdom (UK) Royal Navy into the program, extending a collaboration begun under the DARPA ASTOVL program. The UK is committing $200 million to the Concept Demonstration Phase of the JSF program in accordance with the terms of a Memorandum of Understanding (MOU) signed in December 1995. For the UK Royal Navy, the JSF will replace their Sea Harriers. I expect to sign multi-lateral MOU agreements with the Netherlands, Norway and Denmark in April of 1997.

The JSF has now been designated a Major Defense Acquisition Program and entered its concept demonstration phase in November 1996. Boeing and Lockheed-Martin will each build and fly two full scale concept demonstration aircraft to demonstrate the feasibility of tri-service commonality and reduce technical risk prior to commencement of E&MD in fiscal year 2001. Initial production of the JSF aircraft is anticipated in fiscal year 2005, with first deliveries to operational units in fiscal year 2008.

This program is forging a new approach to weapon systems acquisition in order to reap affordability payoffs. In designing the program, the Department applied the recommendations voiced by the Packard and Carnegie Commissions and other experts on Acquisition Reform. This program is not business as usual-it is different in fundamental ways, which explain why JSF cost projections are lower than would otherwise be expected based on historical programs.

To an unprecedented degree, JSF is using cost and performance trades as an integral part of the weapon system development process. Program Integrated Product Teams of warfighters and technologists are using a disciplined strategy-to-task-to-technology process supported by an extensive underpinning of Modeling, Simulation, and Analysis to facilitate requirements definition by the services. This process permits development of affordable requirements with maximum focus on jointness. The JSF Program has run five Major Regional Contingency campaign level simulations. Over 90 representatives from government and industry participated in each of these exercises.

The JSF Program is conducting numerous Technology Maturation efforts in leveraging areas to reduce risk prior to entering E&MD and lower the life cycle cost. Demonstration results are made available to both industry teams. Achievement of affordability objectives for the prime contractors' preferred weapon system concepts depends on availability of these technologies. Examples of successful demonstrations to date include an advanced 1,000 pound class penetration warhead; virtual manufacturing validated by an F-15 real-world application; and demonstrations

of shared apertures, Virtual Avionics Prototypes, and software common applications. Other demonstrations will quantify weight and cost savings. These include integrated aircraft subsystems; a low-cost multi-function array; paintless aircraft; and innovations in structural materials, design and manufacturing processes.

The JSF Program continues its role as a leader in the area of DoD acquisition streamlining and reform and use of "paperless" processes. It encourages the use of commercial standards and best practices in weapon systems development and teaming with industry to create a common cost model to improve government and industry understanding of weapon system life cycle cost; and will minimize the number of contractor deliverables through on-line access to the contractors' management systems. The program continues to emphasize electronic processes as the standard means of communication. It has an extensive database which exploits the INTERNET for efficient, real-time dissemination of program information including information related to program procurement solicitations.

Now let us specifically address DoD oversight of the JSF Program. With the JSF recently designated as a Major Defense Acquisition Program, the DoD will provide internal and external reports, tailored in accordance with the acquisition streamlining concepts inherent in the new DoD regulations, just as the F/A-18E/F and F-22 Programs have been doing. The Department will specifically provide an RDT&E Selective Acquisition Report for the JSF Program early in April of this year to support the President's fiscal year 1998 Budget.

The JAST/JSF program has undergone intense scrutiny within the Department. The first formal product of the requirements definition process was the Joint Initial Requirements Document (JIRD), signed by all of the participating Services and briefed to the Joint Requirements Oversight Council (JROC) in August 1995. The JROC endorsed the JSF process and "family of aircraft" strategy and emphasized the "the great potential towards achieving an affordable solution to meet our joint warfighting capability." Completion of the Services' Joint Operational Requirements Document (JORD) is anticipated in fiscal year 2000.

From mid-1995 to mid-1996, the key principals from the Defense Acquisition Board (DAB) have conducted three major reviews of the program. As a result of the first review in August 1995, the DAB members concluded that the "tri-service family of aircraft" approach was feasible. In preparation for Concept Demonstration Phase (CDP) draft request for proposal (RFP) release, a DAB review of the JSF demonstration program strategy and funding was held in December 1995. The plan was approved and, after the Deputy Secretary of Defense was briefed, the draft RFP was released. Prior to the formal RFP release in March 1996, a DAB review was again conducted of the acquisition plan, to include CDP objectives, critical technologies, and risk reduction plans. In April 1996, the DoD completed an additional review of the proposed funding for the Engineering and Manufacturing Development (E&MD) phase of the program. This review involved the DAB principals, supported by the OSD Cost Analysis Improvement Group (CAIG). Another review by the Deputy Secretary of Defense followed. This resulted in revised guidance to the Services on funding for the JSF program.

The JSF Program is facilitating the Services' definition of their joint requirements. The Continuous Cost and Operational Performance Trades (COPT) process validates the Services' desired operational capabilities, as reflected in JIRD updates. Updates to the JIRD and ultimately

the JORD will reflect the continuing refinement of JSF requirements based on cost-performance trades. The Services' plan to complete the JORD in FY 2000 to support the Milestone II decision in FY 2001 for start of the E&MD phase. The department will conduct an Analysis of Alternatives (AOA) for Milestone II, independently evaluating the costs and benefits of alternative aircraft programs and alternative JSF design features. The OSD Program Analysis & Evaluation office is designing their AOA guidance to the Services now and will oversee its accomplishment. The AOA will draw on the extensive analytical work done by the JSF program office, but develop independently several alternative approaches that would be available to the DAB at Milestone II to test the superiority of the proposed approach. The DAB and its supporting staff will thoroughly review all program documentation before progressing to the E&MD Phase of the program.

As we prepare to meet the technological, fiscal and threat demands of the next century, the Department of Defense clearly recognizes that we must optimize our tactical air modernization, jointness, and commonality to meet our affordability objectives. The Joint Strike Fighter will contribute to this goal.

PROGRAMMED INVESTMENT

Overall aircraft investment, although cyclical, is projected to remain within historical norms. During the early eighties, aircraft investment was accorded approximately 30 percent of the Department's total investment budget (RDT&E and Procurement). Major expenditures were for bombers, tanker (mobility) aircraft, and tactical aviation. During the current projection period, with the F-22, F/A-18 E/F, and Joint Strike Fighter coming into the procurement phase of the development cycle, the aircraft investment percentage of the investment budget hovers a little below 25 percent. Clearly, tactical aviation is the leading investment area, but it is sustainable since we have concluded our major buys of bomber and transport aircraft. This projection fits the historical norms of the late seventies and early eighties, when F-16, F/A-18, and F-15 aircraft were in production and TACAIR investment reached almost 25 percent of the total DOD investment account.

The plan implemented in the fiscal year 1998 President's Budget Request is being reviewed annually, and some of the details will undoubtedly change. But the plan is sound because it addresses the long-term core needs of the services and accomplishes the following three basic objectives: (1) sustains platform modernization through new aircraft development and procurement that supports long-term force structure goals and protects US qualitative advantages; (2) improves the accurate, guided weapons carried by increasing standoff-range, enhancing all-weather capability, and reducing costs; and (3) develops a dominant capability to exploit off-board, all-source intelligence information.

TACAIR ALTERNATIVES

Mr. Chairman, the foregoing portion of this statement describes the Department's current tactical aviation modernization plan. It is one of the TACAIR alternatives presented in a recent Congressional Budget Office (CBO) Study titled "A Look at Tomorrow's Tactical Air Forces," dated January 1997. I believe the Department's plan is the best alternative-it delivers the best

value to America's war fighters.

I agree with the need to conduct a thorough analysis of all the TACAIR modernization alternatives available to us. In this respect, I applaud the Congress' direction to have the CBO look at TACAIR alternatives. Although we have not conducted a detailed analysis of all the CBO's alternatives, they will get a thorough hearing, as will others, in the Quadrennial Defense Review (QDR).

Many of the CBO alternatives presented have been previously studied, some in great detail during previous reviews such as the Major Aircraft Review, the Bottom-Up Review, and some of our annual program reviews. For example the F-22N was studied in the Major Aircraft Review as an NATF concept, and canceled in large measure because the projected high gross take-off weight exceed the capacity of our current carriers.

Early in the ATF/NATF development, I'm confident that a Naval variant of the F-22 could have been developed. At this juncture, however, to graft a Naval requirement onto an existing F-22 program would be similar to the mistake that the Department made in developing the F-111. In that program, we directed the Air Force to add Naval requirements to an existing Air Force EMD concept "with minimal disruption" to the program. As a result, the Naval version of the F-111 was significantly overweight and subsequently canceled in favor of a new start Navy aircraft, the F-14. As I said, the appropriate time to join multi-service requirements is early in the program, and the ideal time is while the requirements are being developed in a balanced systems engineering approach, such as we are doing in the JSF program.

SUMMARY

Chairman Weldon, Chairman Hunter, members of the subcommittees, thank you for the opportunity to discuss the Department's plans for modernization of US tactical aviation forces. We have worked diligently to field forces capable of achieving air dominance-air superiority and the ability to strike any target from the air-within hours after the start of any future armed conflict.

US forces <u>need</u> the F/A-18E/F, the F-22, and the Joint Strike Fighter. The path we are pursuing is both sound and affordable. The final number of these platforms, the mix of weapons they will carry, and the off-board systems that will supply them with tactical intelligence will continue to be the subject of continuous, on-going affordability and cost-effectiveness studies for years to come. The results of these studies are made available prior to each major decision milestone and are part of the Department's annual program budget reviews.

The three major upcoming decision milestones are the F/A-18E/F production decision, the decision to transition the F-22 to Low Rate Initial Production (LRIP), and the decision for the Joint Strike Fighter to the enter Engineering & Manufacturing Development phase. Of these three decisions, the Joint Strike fighter decision is the largest and will be supported by an independent

Analysis of Alternatives (AOA) study led by PA&E. My point is that, of all the alternatives available to us at the current time, the alternative contained in the fiscal year 1998 budget request is the best value option for the US war fighter and the American people.

The F/A-18E/F is the most mature of the three programs. There is virtually no disagreement on cost. The aircraft is almost 750 lbs. under weight and the program is on track. It provides the Navy with substantial improvements in payload recovery, survivability, mission radius, payload flexibility and growth margin. These improvements are badly needed to roll back enemy air defenses and project power ashore.

The F-22 is the next most mature system. The Defense Acquisition Board has recently looked at the issue of cost growth and approved an aggressive Air Force cost containment plan and program restructure. Without the F-22, the ability of the US Air Force to penetrate enemy air defenses, assure air dominance and strike time critical, high value targets could be severely compromised in the 21st century threat environment. Air commanders might have little choice other than to engage in a campaign of attrition and accept higher losses.

The Joint Strike Fighter is the least mature of the three systems, but has the greatest potential to permanently alter the tactical aviation landscape. The acquisition approach being pursued on this program has the potential of breaking historical cost-capability trends. For a relatively modest annual investment in the concept definition phase, we have an opportunity to prove this approach and establish the world's pre-eminent tactical aviation industry for the next 40 years. It is a premature to foreclose on this option now-before the results are in.

During the Bottom-Up Review (BUR), we decided to make only those decisions we had to make, and continued to refine our options as additional information became available. That is still a good strategy for today. We have been candid about our affordability issues, but we also have shown you strong Departmental consensus that these three programs are vital to our future.

Together, the Department and the Congress have been responsible stewards of the Nation's resources and have maintained a legacy of technological and warfighting supremacy at an affordable cost. I believe the fiscal year 1998 budget request is the most affordable approach for modernizing US tactical aviation forces and securing air dominance well into the 21st century. I thank you for this opportunity to appear before the Subcommittees and shall be happy to answer any questions you may have.